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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/589,764

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Joshua Lawrence Koslov

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EXAMINER

PATHAK, SUDHANSHU C

ART UNIT

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2611

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/589,764	<b>Applicant(s)</b> KOSLOV, JOSHUA LAWRENCE	
	<b>Examiner</b> SUDHANSHU C. PATHAK	<b>Art Unit</b> 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 26 August 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 March 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

1. Claims 1-35 are pending in the application.

### *Response to Arguments*

2. Applicant's arguments filed in amendment dated 08/26/2009 have been fully considered but they are not persuasive.

In regards to the specific arguments presented "Applicant's independent claims 1, 10, 16 and 19 all require using soft decisions to generate a carrier. Simply put, Chen does not use soft decisions to generate a carrier as claimed by Applicant", this is incorrect. This is clearly recited in the rejection below i.e. Chen (WO 02/089371 A1) in view of Jaffe et al. (7,499,507), wherein **Chen** discloses recovering a carrier from the received multi-level modulation signal as a function of decisions with respect to a first layer of the at least two layers (Fig.'s 4A-B, element 402, 410 & Page 2, lines 5-15 & Page 7, line 23-to-Page 10, line 18 & Claim 6) {Interpretation: The reference discloses recovering a carrier for both the upper and lower layer wherein the lower layer carrier is recovered after decoding the upper layer Viterbi decoder i.e. the reference discloses recovering a carrier of the lower layer (element 410) as a function of decisions with respect to a first layer (output of element 402)}. However, Chen does not explicitly disclose the viterbi decoder to be a soft decision decoder.

Jaffe discloses a method for use in a receiver for receiving a satellite signals (Fig. 1 & Fig. 3) comprising a viterbi decoder to be a soft decision decoder (Fig. 3, element 301 & Abstract, lines 8-19 & Column 3, lines 36-62) {Interpretation: The

reference discloses implementing a soft decision viterbi decoder over a hard decision decoder (slicer) to decode encoded signals}. Furthermore, the examiner has provided a motivation to combine the references (see rejection below).

Furthermore, the examiner would also like to point out that the applicant discloses recovering a carrier by a process driven by hard decision (Applicant Admitted Prior Art (AAPA), Paragraph 4, lines 8-12 & Paragraph 5, lines 1-2) and the inventive step is only performing this step using soft decisions (Paragraph 5, lines 2-7). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that AAPA in view of Jaffe also satisfies all the limitations of the independent claims.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-18 (method) & 19-27 (apparatus) are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (WO 02/089371 A1) in view of Jaffe et al. (7,499,507).

In regards to Claims 1-2, 9, 23-24, Chen discloses a method for use in a receiver (Fig.'s 4A-B), the method comprising: receiving a multi-level modulation signal having, at least two signal layers (Fig.'s 4A-B & Page 2, lines 5-30 & Page 3, lines 12-19) {Interpretation: The reference discloses receiving a multi-level modulation i.e.

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16QAM having at least two layers i.e. lower layer and upper layer modulation}; and recovering a carrier from the received multi-level modulation signal as a function of decisions with respect to a first layer of the at least two layers (Fig.'s 4A-B, element 402, 410 & Page 2, lines 5-15 & Page 7, line 23-to-Page 10, line 18 & Claim 6)

{Interpretation: The reference discloses recovering a carrier for both the upper and lower layer wherein the lower layer carrier is recovered **after** decoding the upper layer **Viterbi decoder** i.e. the reference discloses recovering a carrier of the lower layer (element 410) as a function of decisions with respect to a first layer (output of element 402}. However, Chen does not explicitly disclose the viterbi decoder to be a soft decision decoder.

Jaffe discloses a method for use in a receiver for receiving a satellite signals (Fig. 1 & Fig. 3) comprising a viterbi decoder to be a soft decision decoder (Fig. 3, element 301 & Abstract, lines 8-19 & Column 3, lines 36-62) {Interpretation: The reference discloses implementing a soft decision viterbi decoder over a hard decision decoder ( slicer) to decode encoded signals}. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Jaffe teaches a soft decision viterbi decoder to decode encoded signals in a receiver and this is implemented in the receiver as described in Chen so as to be able to reliably decode multilayer signals in a low signal to noise ratio channel environment.

In regards to Claim 3, 10-12, 16-21, 25-34, Chen in view of Jaffe discloses a method (apparatus) (apparatus) for use in a receiver as described above. Chen further discloses the recovering step further comprises: demodulating the first layer

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of the received layered modulation signal to provide a demodulated first layer signal representing a stream of signal points (Fig.'s 4A-B, element 404); soft decoding the demodulated first layer signal to provide a decoded first layer signal (Fig.'s 4A-B, element 402 & Page 8, lines 1-10); generating a remapped first layer signal from the decoded first layer signal, the remapped first layer signal representing a stream of symbols (Fig. 4B, element 406, 418); recovering a carrier from the received layered modulation signal using the remapped first layer signal and processing the received layered modulation signal with the recovered carrier to extract therefrom a second layer of the at least two layers of the received layered modulation signal (Fig. 4B, element 412). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Chen in view of Jaffe satisfies the limitation of the claim. Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention that the receiver is implemented as an integrated circuit so as to minimize the physical space and further increase reliability do to minimum connections.

In regards to Claims 4-5, 7-8, 13, 15, 22, Chen in view of Jaffe discloses a method for use in a receiver as described above. Chen further discloses the generating step includes the steps of: re-encoding the decoded first layer signal to provide a re-encoded first layer signal (Fig. 4B, element 406); and remapping the re-encoded first layer signal to provide the remapped first layer signal (Fig. 4B, element 418). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Chen in view of Jaffe satisfies the limitation of the claim.

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Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention that the process of regenerating the upper level signal includes rerotating and filtering and then subtracting the upper layer signal to isolate the lower layer signal from the combined signal.

In regards to Claims 6, 14, 28 & 35, Chen in view of Jaffe discloses a method for use in a receiver as described above. Chen further discloses the recovering step includes the step of filtering the received layered modulation signal for removing intersymbol interference associated with the first layer signal (Fig. 4B, element 418 & Page 8, lines 9-13) {Interpretation: The reference discloses estimating the distortion effects which is interpreted as intersymbol interference}. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Chen in view of Jaffe satisfies the limitation of the claim.

### ***Conclusion***

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing

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date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SUDHANSHU C. PATHAK whose telephone number is (571)272-5509. The examiner can normally be reached on 9am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Sudhanshu C Pathak/  
Primary Examiner, Art Unit 2611